

Nov. 18, 1952

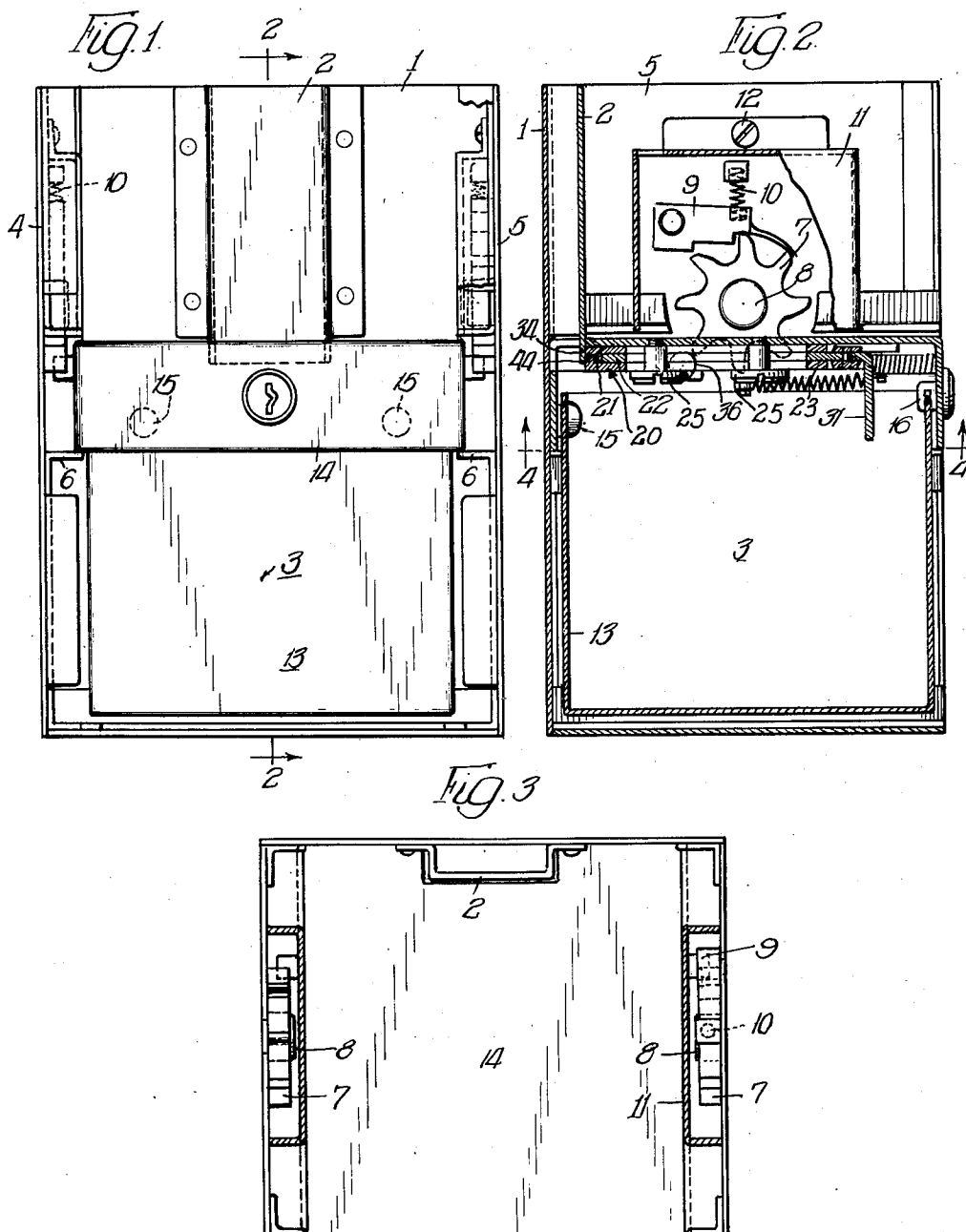
W. J. THORNLEY

2,618,436

COIN BOX

Filed Feb. 23, 1950

2 SHEETS—SHEET 1



INVENTOR.
William J. Thornley,
BY
George H. Simmons
att'y

Nov. 18, 1952

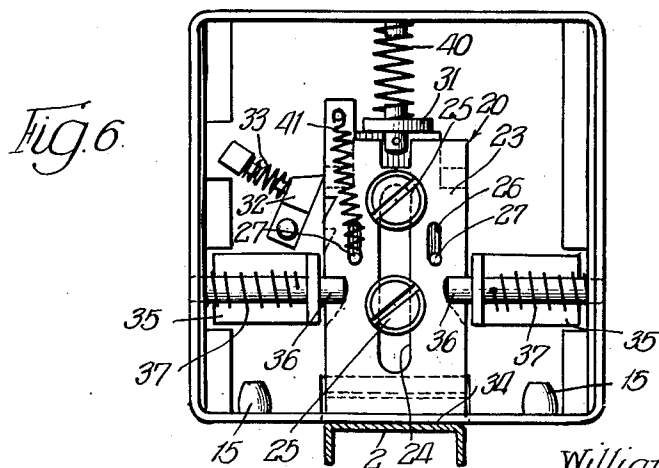
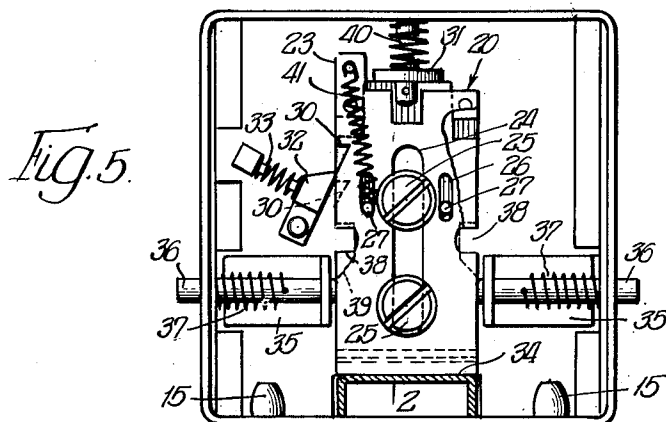
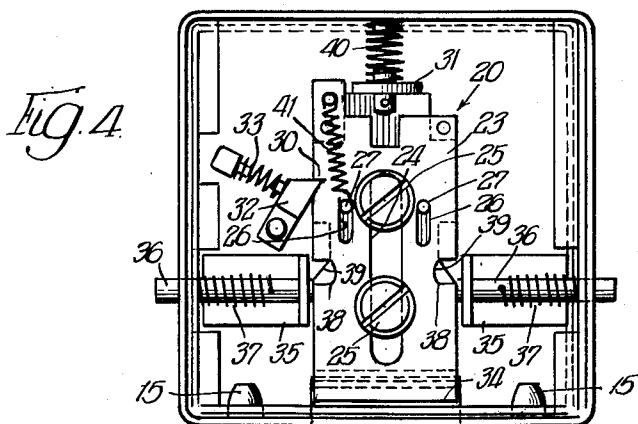
W. J. THORNLEY

2,618,436

COIN BOX

Filed Feb. 23, 1950

2 SHEETS—SHEET 2



INVENTOR.

William J. Thornley,

BY

George H. Shumway
att'y

UNITED STATES PATENT OFFICE

2,618,436

COIN BOX

William J. Thornley, Chicago, Ill.

Application February 23, 1950, Serial No. 145,719

8 Claims. (Cl. 232-15)

1

This invention relates to tamperproof coin boxes for use in vending machines, fare boxes, telephone pay stations, coin-operated turnstiles, and the like, and has for its principal object the provision of a new and improved device of this kind.

It is a main object of the invention to provide a coin box that is locked and conditioned for insertion in a vending machine by an official at the office, prior to delivery to the collector who inserts it in the machine out in the field, and which, when once inserted in the machine, is locked therein and on removal therefrom is automatically locked in tamperproof position.

Another object of the invention is to provide a locked, removable coin box that can be inserted in and removed from a vending machine in locked condition, without the use of keys or tools by the collector.

Another object of the invention is to provide a coin box which is self-locking in tamperproof condition and which must complete the operation of locking itself in such condition before it can be removed from the vending machine.

Still another object of the invention is to provide a simple, sturdy mechanism that can be manufactured at low cost, without sacrificing quality, and can be maintained in proper operating condition economically.

Further objects of the invention not specifically mentioned herein will be apparent from the description and claims which follow, reference being had to the accompanying drawings in which a preferred embodiment of the invention is shown by way of example and in which:

Fig. 1 is an elevational view of a portion of a vending machine showing the coin box in operating position in a vending machine;

Fig. 2 is a cross-sectional view taken substantially along the line 2-2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a plan view of Fig. 1;

Fig. 4 is a cross-sectional view along the line 4-4 of Fig. 2, looking in the direction of the arrows and showing the bolt in triggered position;

Fig. 5 is a view similar to Fig. 4, showing the bolt in the position assumed when the box is in operative position in the machine; and

Fig. 6 is a view similar to Fig. 4, showing the bolt locked in tamperproof position.

Coin-operated vending machines, fare boxes, telephone pay stations, turnstiles, and the like, usually consist of a casing within which is a chute through which the coins pass into a box or receptacle from which they are removed by

2

the collector when the machine is being serviced. Frequently the coin receptacles are open-top boxes, usually metal, and in which loose coins are contained.

Machines of this type are used in varying locations and it has been found that the practice of dumping the loose coins from the coin box into a bag or satchel results in the loss of many coins and, in addition, in certain instances, pilfering of the coins by the collector has been practiced.

In the prior art of which I am aware, numerous attempts have been made to provide a coin box which can be locked by a suitable official of the company and delivered to the collector for insertion in the vending machine, the box after being filled or partially filled with coins being removed from the machine and returned to the company office where it is unlocked and its contents removed by proper officials, a second box being installed in the vending machine meanwhile.

Such prior art devices, while an improvement over the open coin receptacle, nevertheless have been subject to the criticism that they were not entirely tamperproof, and it has been possible for dishonest employees to pilfer coins from the boxes without detection.

The present invention provides a locked box which is conditioned or triggered by a proper company official for insertion in the vending machine and delivered to the collector in this condition. Upon insertion in the machine, the triggering arrangement is automatically restored, and once the box has been locked in position in the vending machine a bolt for closing the slot through which coins enter the box will be automatically moved into slot-closing position and locked therein before the box can be freed for removal from the vending machine. When completely removed from the machine, the coin box is completely locked and coins cannot be removed from it surreptitiously without mutilation of the box, a practice seldom indulged in because of the ease of detection. The box and its contents are delivered to proper officials who empty the box and re-trigger it for re-insertion in a machine.

In the drawings, a vending machine is fragmentarily shown and consists of a casing having a back wall 1, upon which is mounted a chute 2 through which coins enter the removable box generally shown at 3. Mounted upon the side walls 4 and 5 of the casing are flanges 6 which serve to support the removable coin box in the casing, as will presently appear.

3

Also mounted upon the side walls 4 and 5 are star wheels 7 rotatably supported upon suitable pivots 8 and capable of rotating thereupon. Also mounted on the side wall is a pawl 9 pressed against the star wheel by a suitable spring 10 and serving to limit movement of the star wheel to rotation in one direction. As shown in the drawings, the star wheel, pawl and spring are mounted as a unit in a suitable casing 11 which can be attached to the side walls 4 and 5 of existing machines by suitable means such as screws 12.

The coin box consists of an open-top receptacle 13 and a cover 14, the receptacle being perforated near the top to receive lugs 15 by which one edge of the cover is secured to the box. The cover carries a suitable locking device 16 on the edge opposite the lugs 15 and through the operation of which the cover is securely locked on the box.

Preferably the cover is a flanged cover and fits down over the outside of the box 13, as shown, the lower edge of the flange engaging flanges 6, thereby to support the coin box in the machine.

Mounted upon the underside of the top of the cover is a bolt, indicated generally at 20, consisting of three plates 21, 22 and 23, the outer ones 21 and 23 of which are permanently fastened together to form a guide for the center plate 22 which is movable with respect to the others.

All three plates contain an elongated central slot 24 through which are extended collared screws 25 by which the bolt is mounted upon the cover for limited longitudinal translatory movement with respect thereto.

The plate 23 contains elongated slots 26 through which are projected pins 27 carried by the central plate 22 to guide and limit the movement of the plate 22 with respect to the other plates.

Plates 21, 22 and 23 each contain a generally V-shaped notch 30, and the notches of the three plates are aligned when the plate 22 is moved with respect to plate 23 to position pins 27 in the ends of slots 26 nearest the notch 30 in plate 23, as shown in Fig. 4. Plate 22 carries at one end a finger 31 by which it may be moved with respect to the other plates.

Mounted upon the cover is a pawl 32 which is pressed by a suitable spring 33 into the aligned notches 30, thereby to hold the bolt in triggered position. It will be noted in Fig. 4 that when the bolt is in triggered position, the end 34 of the bolt is spaced inwardly from the outer edge of the cover.

Mounted upon the underside of the cover by suitable brackets 35 are pins 36 which extend through the flanges of the cover and are disposed at right angles to the longitudinal axis of the bolt 20. Suitable springs 37 encircle these pins 36 and are tensioned to move the pins inwardly toward the bolt.

Each of the plates 21, 22 and 23 also contains a generally rectangular slot 38, which slots, when the slidable plate 22 is in the position shown in Fig. 5, that is, with the pins 27 at the ends of the slots 26 farthest from notch 30 in plate 23, form mortises leading into the opposite edges of the bolt. The movable plate 22 contains cam surfaces 39 arranged so that as the plate 22 is moved into the position shown in Fig. 4, pins 36 will be moved outwardly against the tension of springs 37 and held with the inner ends of the pins aligned with the opposite edges of the bolt. Movement of plate 22 from the position shown in Fig. 5 to the position shown in Fig. 4 is made against the tension of springs 37 and spring 40.

4

Spring 41, extending between one of the pins 27, carried by plate 22 and a suitable pin on plate 23, is tensioned to add this movement of the plate.

When the cover is locked on the box 13 with the bolt 20 in the position shown in Fig. 4, the box is ready for insertion in the machine. As the box is pushed inwardly of the machine, pins 36 engage the star wheels 7 and rotate these wheels. The end 34 of the bolt engages the chute 2, and as the coin box is moved into position the bolt 20 is moved into the position shown in Fig. 5.

Mounted within the cover and engaging the finger 31 is a spring 40 tensioned to move the bolt to register the end 34 thereof with the flange on the cover, as seen in Fig. 6. As the outer end 34 of the bolt engages the chute, further movement of the coin box forces the bolt inwardly of the cover and spring 40 moves the plate 22 so as to position pins 27 at the ends of the slots 26 nearest the end 34 of the bolt, as shown in Fig. 5. Spring 41 is tensioned by this movement of the plate 22; however, since the spring 41 is weaker than the spring 40, plate 22 remains in the position shown in Fig. 5.

This movement of the plate 22 moves the notch 30 in the plate 22 out of registration with the notches 30 in the plates 21 and 23, as will be seen in Fig. 5. This action moves the pawl 32 against the tension of spring 33 and into alignment with the edge of the bolt. This movement of the plate 22 also moves the cams 39 out of registration with the slots in the other plates, thereby opening the mortises 38 for future use. The bolt and coin box are now in the position in which they are shown in Figs. 2 and 5, that is in the machine in readiness for the reception of coins.

When it is desired to remove the coin box from the machine, the box is slid forwardly thereof, that is, to the right, as seen in Fig. 2. It will be noted that the pin 36 has moved past a tooth on the star wheel 7 and that there is an appreciable distance between the pin 36 and the lowermost tooth on the star wheel, so that the box can be moved a short distance while the pins 36 are in extended position. As this movement is carried out, the edge of the cover adjacent end 34 of the bolt, is moved into alignment with the edge of the chute 2, as shown in Fig. 6. Spring 40, being tensioned to urge the bolt 20 towards this edge of the cover, maintains the edge 34 of the bolt in engagement with the chute 2 and during this movement the bolt moves from the position shown in Fig. 5 into the position shown in Fig. 6. When the edge 34 of the bolt is aligned with the lowermost edge of the cover, mortises 38 are in alignment with the pins 36, and springs 37 move the pins 36 into the mortises thereby locking the bolt in the position in which it is shown in Fig. 6. In this position the slot in the cover into which the coin chute 2 fits, is completely closed. Movement of the pins 36 into the mortises retracts the projecting ends of these pins into alignment with the flanges on the cover. This retraction of the pins moves them out of engagement with the star wheel 7, thereby freeing the coin box so as to permit it to be removed from the machine.

So long as the pins 36 remain in the mortises, the bolt 20 cannot be moved to open the slot, and consequently coins cannot be extracted from the coin box. Alignment of the outer ends of the pins 36 with the flanges of the cover make pulling out of the pins against the tension of springs 37 next to impossible.

5

It will be apparent that movement of the plate 22 with respect to the other plates will cam the pins outwardly, and if the plate 22 were exposed it would be relatively simple to tamper with a locked box. As will be seen best in Fig. 2, the end of the plate 22 adjacent the end 34 of the bolt is not exposed to view, but rather a filler 44 extends between the plates 21 and 23, thereby guarding the movable plate 22 so that it cannot be moved from the outside of the cover.

In the drawings, the front cover of the vending machine, which fits over and conceals the coin box and star wheel assemblies, has been omitted to avoid an unnecessary complication of the figures.

The coin box of the present invention is possessed of many advantages. It can be manufactured as a strong, sturdy unit economically. If desired, the cover and box may both be case-hardened, thereby to make tampering with the box more difficult. When triggered and locked by a proper official and delivered to the collector for insertion in the machine, the bolt is set so that it is impossible to put the coin box in the machine without releasing the trigger, thereby to set the bolt for automatic closure of the slot in the box when removal of the box from the machine is attempted.

While I have chosen to illustrate my invention by showing and describing a preferred embodiment of it, I have done so by way of example only, as there are many modifications and adaptations which can be made by one skilled in the art within the teachings of the invention.

Having thus complied with the statutes, and shown and described a preferred embodiment of my invention, what I consider new and desire to have protected by Letters Patent is pointed out in the appended claims.

What is claimed is:

1. In a coin-operated vending machine, a casing; a pair of horizontal flanges, one on each of two opposed sides of the casing; a star wheel pivotally mounted on each of said sides in juxtaposition to said flanges; pawls engaging said star wheels to limit movement thereof to rotation in one direction; a coin box; a cover therefor locked thereon; pins projecting from said cover on opposite sides thereof, said pins engaging said star wheels when the box is supported by engagement of the edges of the cover with said flanges and rotating the star wheels as the box is moved into position in the casing; a chute in the casing, there being a slot in the cover registered with the chute when the box is supported in the casing; a bolt for closing said slot, said bolt being slidably mounted in the cover and being moved away from the slot by the chute as the box is moved into position in the casing; a spring for moving said bolt into slot closing position as the box is moved to withdraw it from the casing, said star wheels and pins permitting limited withdrawal of the box, said bolt containing mortises aligned with said pins when the bolt is in slot closing position; and springs for retracting the pins into the box and into the mortises thereby to lock the bolt in slot closing position and to free the box for complete removal from the casing.

2. In a tamperproof coin box for vending machines, a bolt movable into registration with one edge of the box to close a slot through which coins move into the box, said bolt having mortises into which pins project to lock the bolt in slot closing position, said bolt comprising three plates

6

disposed in face-to-face relation, with the center plate movable with respect to the other plates; and cam surfaces on said center plate for moving said pins out of the mortises as the center plate is moved with respect to the other plates thereby to unlock the bolt for movement out of said slot closing position.

3. In a tamperproof removable coin box for vending machines, a bolt for closing the slot through which coins enter the box, comprising: three generally rectangular plates disposed one above the other in face-to-face relation, each of said plates having an elongated slot that coincides with the slots in the other two plates to form a groove through which means are extended to mount the plates for translatory movement along the longitudinal axis of the bolt, there being other elongated slots in one of said plates; pins carried by the middle one of the plates and extending through said other slots to permit limited longitudinal movement of the middle plate with respect to the other plates, each of said plates having a notch in one of its edges, the notches being aligned to receive a pawl when said middle plate is moved to position said pins at one end of said other slots thereby to hold said bolt in a set position, the notch in the middle plate being out of alignment with the other notches when the middle plate is moved to position said pins at the other ends of said other slots thereby to leave said bolt free to move longitudinally; and mortises in said plates aligned when said middle plate is in the second named position and into which pins may be moved when the bolt is in slot closing position to lock the bolt in that position.

4. A tamperproof removable coin box for vending machines, comprising: a closed metallic box having a slot in its upper face; a bolt mounted within said box adjacent said face and movable with respect thereto to close the slot, there being mortises in said bolt; and pins mounted in said box and moved into said mortises when the bolt is in slot closing position for locking the bolt to prevent tampering with the contents of the box.

5. A tamperproof removable coin box for vending machines, comprising: a closed metallic box having a slot in its upper face; a bolt mounted within said box adjacent said face and movable with respect thereto to close the slot, there being mortises in said bolt; pins mounted in the box and projecting therefrom to engage latches in the machine to hold the box therein; and springs for retracting said pins to release the box from the machine and for moving the pins into said mortises to lock the bolt and thereby prevent tampering with the contents of the box.

6. A removable coin box for use in a vending machine having a coin chute through which coins move into the box and latches for securing the box in the machine, comprising: a closed box having a slot through which coins enter the box; pins projecting from said box and engaging said latches to secure the box in the machine; a bolt within the box; spring means in the box for moving said bolt into position to block said slot thereby to prevent coins from passing there-through; mortises in said bolt aligned with said pins when the bolt is in slot closing position; and springs for moving said pins into the box and into said mortises thereby to free said box for removal from the machine.

7. A coin box for safekeeping coins placed in vending machines and moving through a chute into the box, comprising: an open-top box; a

7

removable cover for closing said box; lock means for securing the cover on the box, there being a slot opening in said cover through which coins may enter the box; a slidable bolt mounted on the underside of said cover adapted to be moved across said slot to thereby secure coins within the box; spring means tensioned to move said bolt to close the slot; a latch for holding said bolt in position to partially open said slot; pins mounted on said cover and extending laterally in opposite directions from said bolt; cams on said bolt for forcing said pins outwardly of the cover as the bolt is moved to partially open the slot thereby to ready the box for insertion in a machine, said bolt being moved by the coin chute as the box is placed in the machine to fully open the slot and to render said latch inoperative, there being mortises in said bolt aligned with said pins when the bolt completely closes the slot, said spring means moving the bolt to the latter position during initial movement of the coin box out of the machine; and other spring means for retracting said pins into said box and into said mortises to permit complete removal of the box from the machine and to lock said bolt in slot closing position.

8. A removable coin box for use in a vending machine having a coin chute through which coins move into the box, comprising: a closed box having a slot registerable with the coin chute and through which coins move into the box; a bolt within the box adapted to be moved across the slot to close the same; a spring for moving

8

said bolt into slot closing position; latch means for holding said bolt in position to partially open said slot and thereby condition the box for insertion in a machine; pins in said box projecting laterally from said bolt; cams on the bolt for moving said pins outwardly as the plate is moved to said partially open position; rotatable latches engaged and rotated in one direction by said pins as the box is moved into position in the machine, said bolt engaging the coin chute and being moved thereby as the box is moved to fully open the slot; detents engaging said rotatable latches to prevent withdrawal of the box by preventing rotation of said rotatable latches in a reverse direction; mortises in said plate aligned with said pins when the bolt is in position to completely close said slot; and springs for retracting said pins into the box to permit removal of the box from the machine after the slot is closed and into said mortises to lock the bolt in slot closing position thereby to prevent tampering with the contents of the box.

WILLIAM J. THORNLEY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
988,881	Kohler	Apr. 4, 1911
1,293,695	Burrows	Feb. 11, 1919